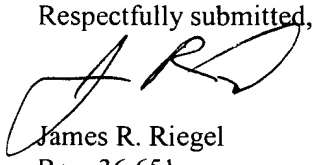
REMARKS

Claims 47-76 are pending in this application. Claims 47, 54, 59, 60-65, 70, 71, 74, and 75 have been changed by this amendment. Applicant reserves the right to reintroduce claims of comparable scope to the original claims in a continuation or other related application.

The Examiner rejected claims 1-46 under the judicially-created doctrine of obviousness-type double patenting as being unpatentable over claims 1-25 of U.S. Patent No. 6,191,774. However, claims 1-46 are not pending in this application. The preliminary amendment filed 1/5/01 cancelled claims 1-46 and added new claims 47-76, which are reproduced herein with minor amendments made to improve the form of the claims and not for reasons of patentability. The Examiner is requested to review the claims 47-76 as presented herein. Applicant will respond to the obviousness-type double patenting rejection if the Examiner maintains this rejection after examining claims 47-76.

Applicant believes that all pending claims are allowable and respectfully requests a Notice of Allowance from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

Respectfully submitted,



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MARKED-UP VERSION OF AMENDMENTS

In the Claims:

All pending claims are listed below for the convenience of the Examiner. Claims which have been changed by this amendment are labeled as "amended."

47. (amended) A user interface device engaged by a user for controlling a graphical cursor displayed by a host computer in communication with said user interface device, and for providing tactile feedback, said user interface device comprising:

a planar touchpad sensor able to detect planar user motion in an x-y plane, said touchpad sensor also able to detect a degree of force or pressure applied to said touchpad sensor by said user in a z-direction; and

at least one actuator operative to provide [providing] tactile sensations to said user, said at least one actuator controlled by software to generate said tactile sensations, said software controlling said actuator as a function of a position of said cursor displayed by said host computer, and said software controlling said actuator also as a function of said detected degree of force or pressure applied to said touchpad sensor in said z-direction.

48. A user interface device as recited in claim 47 wherein said software increases the magnitude of said tactile sensations in response to increases in the detected degree of force or pressure.

49. A user interface device as recited in claim 48 wherein said tactile sensations simulate a sense of friction for the user.

50. A user interface device as recited in claim 48 wherein said tactile sensations are associated with a simulated pen-tip drawing graphical objects or shapes upon a graphical display.

51. A user interface device as recited in claim 47 wherein said actuator is also controlled as a function of the velocity of user motion in the x-y plane.

52. A user interface device as recited in claim 48 wherein said tactile sensations are texture sensations.

53. A user interface device as recited in claim 51 wherein the feel of said texture to said user is modulated as a function of both the applied pressure in the z-axis and the velocity of user motion in the x-y plane.

54. (amended) A user interface device as recited in claim 47 wherein said tactile sensations are deactivated when the user is not engaging said user interface with [sufficient] pressure above a predetermined threshold.

55. A user interface device as recited in claim 47 wherein said degree of force or pressure in said z-direction is also used to control an indexing function of said user interface device.

56. A user interface device as recited in claim 47 wherein said touchpad sensor senses a location of contact with a pointer member having movement controlled by said user.

57. A user interface device as recited in claim 47 further comprising a linkage mechanism coupling a user manipulatable object to said actuator, wherein said linkage mechanism allows said user motion of said user object in said x-y plane.

58. A user interface device as recited in claim 47 wherein said user manipulatable object is one of a mouse and a stylus.

59. (amended) A user interface device as recited in claim 47 wherein said touchpad sensor [is] includes a planar photo diode.

60. (amended) A user interface device engaged by a user for controlling a graphical cursor on a display of a host computer in communication with said user interface device, and for providing tactile feedback, said user interface device comprising:

a user manipulatable object contacted by a user and moveable by said user in an x-y plane;

a planar touchpad sensor able to detect said motion of said user manipulatable object in said x-y plane, said touchpad sensor also able to detect a degree of force or pressure applied to said touchpad sensor by said user in a z-direction; and

at least one actuator [providing] operative to provide tactile sensations to said user, said at least one actuator controlled as a function of a position of said cursor and as a function of said detected degree of force or pressure applied to said touchpad sensor in said z-direction.

61. (amended) A user interface device as recited in claim 60 further comprising a control processor separate from said host computer, said control processor controlling said at least one actuator to output said tactile sensations, and wherein data derived from said degree of force or pressure applied to said touchpad sensor is used by said control processor, at least in part, to [compute] control said tactile sensations.

62. (amended) A user interface device as recited in claim 61 wherein said tactile sensations are provided in said x-y plane of said user manipulatable object and include a damping sensation, a magnitude of said damping sensation being dependent at least in part on said data derived from said degree of force or pressure.

63. (amended) A user interface device as recited in claim 62 wherein said damping sensation created by said at least one actuator [actuators] has a greater magnitude when said user is applying more pressure on said user object into said x-y plane and wherein said damping sensation created by said at least one actuator has a lesser magnitude when said user is applying less pressure on said user manipulatable object into said x-y planar workspace.

64. (amended) A user interface device as recited in claim 61 wherein said tactile sensations include a friction sensation, a magnitude of said friction sensation being dependent at least in part on data derived from said degree of force or pressure.

65. (amended) A user interface as recited in claim 64 wherein said friction sensation created by said at least one actuator [actuators] has a greater magnitude when said user is applying more pressure on said user object into said x-y planar workspace and wherein said friction sensation created by said at least one actuator [actuators] has a lesser magnitude when said user is applying less pressure on said user manipulatable object in said x-y plane.

66. A user interface device as recited in claim 61 wherein said feel sensation is a texture sensation, the magnitude of said texture sensation being dependent in part on data derived from said degree of force or pressure.

67. A user interface device as recited in claim 66 wherein the texture sensation created by said at least one actuator is stronger when said user is applying a greater amount of pressure on said user manipulatable object into said x-y plane and wherein said texture sensation created by said at least one actuator is weaker when said user is applying a lesser amount of pressure on said user manipulatable object into said x-y plane.

68. A user interface device as recited in claim 61 wherein said user manipulatable object is a mouse, and wherein said touchpad sensor measures how hard said user pushes down on a top surface of said mouse.

69. A user interface device as recited in claim 61 wherein said user manipulatable object is a stylus, and wherein said touchpad sensor measures how hard said user pushes down on said stylus.

70. (amended) A user interface device as recited in claim 60 wherein [data corresponding to said detected degree of force or pressure is also used to monitor safety, wherein] said control processor limits said force output from said at least one actuator when said [user is not pushing down on said user manipulatable object with sufficient] detected degree of force or pressure is below a predetermined threshold force.

71. (amended) A method for providing tactile feedback, using a user interface device engaged by a user for controlling a graphical cursor displayed by a host computer in communication with said user interface device, the method comprising:

detecting planar motion of a user manipulatable object in an x-y plane using a touchpad sensor;

detecting with said touchpad sensor a degree of force or pressure applied to said touchpad sensor by said user in a z-direction; and

providing tactile sensations to said user using at least one actuator of said user interface device, said at least one actuator being controlled as a function of a position of said cursor[,] and controlled as a function of said detected degree of force or pressure applied to said touchpad sensor in said z-direction.

72. A method as recited in claim 71 wherein the magnitude of said tactile sensations is increased in response to increases in the detected degree of force or pressure.

73. A method as recited in claim 71 wherein said tactile sensations simulate a sense of friction for the user.

74. (amended) A method as recited in claim 71 wherein said at least one actuator is also controlled as a function of the velocity of user motion in the x-y plane.

75. (amended) A method as recited in claim 71 wherein said tactile sensations are deactivated when the user is not engaging said user interface with [sufficient] pressure above a predetermined threshold.

76. A method as recited in claim 71 wherein said degree of force or pressure in said z-direction is also used to control an indexing function of said user interface device.